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Date: February 23, 2009

By /Jennifer Archer/
Jennifer Archer

Attorney Docket No. 100716-59
Confirmation No. 5370

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT	:	HELMUT BONNEMANN ET AL.
SERIAL NO.	:	10/518,703
CUSTOMER NO.	:	27384
FILED	:	December 20, 2004
FOR	:	MONODISPERSABLE MAGNETIC NANOCOLLOIDS HAVING AN ADJUSTABLE SIZE AND METHOD FOR THE PRODUCTION THEREOF
ART UNIT	:	1793
EXAMINER	:	Jie Yang

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPELLANTS' BRIEF ON APPEAL PURSUANT TO 37 CFR § 41.37

SIR:

This is an appeal from the final rejection of claims 1-18.

(1) REAL PARTY IN INTEREST

The real party in interest is Studiengesellschaft Kohle mbH, by virtue of an assignment recorded in the United States Patent and Trademark Office on December 20, 2004, at Reel

016920, Frame 0410.

(2) RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

(3) STATUS OF CLAIMS

The application was originally filed with claims 1-18. All of claims 1-18 are finally rejected, and this appeal is taken as to the final rejection of all of claims 1-18.

(4) STATUS OF AMENDMENTS

There have not been any amendments after the final rejection.

(5) SUMMARY OF THE CLAIMED SUBJECT MATTER

There are two independent claims. The first independent claim, claim 1, relates to a process for the preparation of magnetic particles. The process comprises decomposing (**page 4, line 2**) low-valency compounds of the metals of the magnetic particles (**page 4, lines 4-7**) in the presence of an organometallic compound of a metal of group 13 (**page 4, lines 7-9**).

As discussed in the instant specification at page 1, lines 17-26, magnetic nanocolloids are sought-after materials for the production of magnetofluids. Magnetofluids are used in industry as a sealing medium against dust and gases in magnetic fluid seals (liquid O-ring), for lubricating

and supporting rotating shafts (magnetic levitation bearings) and for magneto-optical information storage. Magnetofluids are also used in the medical-pharmaceutical sector, for example, in magnetic markers for diseased cells and magnetic cell separation in biological samples, and furthermore in local application of medicaments.

To date, only insufficient monodispersity of the nanoscopic magnetic particles has been achieved by conventional preparation methods (FIG. 1). This deficiency leads to a magnetization of the conventional material which is unsatisfactory for many applications (curve B in FIG. 3). Where monodisperse magnetic particles can be produced by special methods, the low yield is unsatisfactory for practical applications.

Various processes are known for the preparation of colloidal magnetic metals, in particular, of nanoscopic Fe, Co and Ni. These processes include, for example, salt reduction; thermal, photochemical and sonochemical decomposition of metal carbonyls and nitrosyl complexes; and the reduction of salts or the decomposition of carbonyl compounds in micellar solutions. However, these methods always lead to nanoscopic magnetic metal colloids having a broad particle size distribution (cf. FIG. 1). These are suitable only to a limited extent for the abovementioned applications because a broad particle size distribution in the case of magnetic material permits only insufficient magnetization, i.e. the slope of the magnetization curve is too small for practical purposes (B in FIG. 3).

There have been many attempts to produce magnetofluids having high saturation magnetization for industrial applications, but without real success. These are described in the paragraph bridging pages 2-3 of the specification.

Accordingly, as discussed in the second paragraph on page 3, it was an object of the present invention to prepare monodisperse, magnetic nanocolloids of adjustable size without an additional separation step (such as, for example, centrifuging or magnetic separation), from which nanocolloids dispersions of high saturation magnetization for said applications can be produced using dispersants.

This object was met, as discussed in the paragraph bridging pages 3-4, by the process as claimed in appealed claim 1.

Such process results in novel monometallic or polymetallic magnetic particles having properties not realizable previously.

Accordingly, the second independent claim, claim 12, relates to such monometallic or polymetallic magnetic particles obtainable by the inventive process, i.e., having a mean particle size, determined by TEM, of between 2 and 15 nm (**page 3, line 38, to page 4, line 1**) and a particle size distribution with a standard deviation of not more than 1.6 nm (**page 3, lines 35-38**).

(6) GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

There are three grounds of rejection to be reviewed on appeal:

1. The final rejection of claims 1, 2, 5-7, 9, 12 and 13 under 35 USC § 103(a) as being obvious over Shouheng Sun et al. ("Sun 'S287"), *Science, 287:* 1989-1992 (2000), in view of Bonnemann et al. ("Bonnemann '377"), US 5,308,377.

2. The final rejection of claim 10 under 35 USC § 103(a) as being obvious over Sun 'S287 in view of Bonnemann '377 and further in view of allegedly admitted prior art in the specification at page 2, lines 2-13.

3. The final rejection of claims 3, 4, 8, 11 and 14-18 under 35 USC § 103(a) as being obvious over Sun 'S287 in view of Bonnemann '377 and further in view of Bonnemann et al. ("Bonnemann '304"), US 6,531,304.

(7) ARGUMENT

I. Rejection of Claims 1, 2, 5-7, 9, 12 and 13 as being obvious over Sun 'S287 in view of Bonnemann '377

A. Claims 1, 2, 5-7 and 9

1. **The record is devoid of any plausible reason why a person having ordinary skill would have found it obvious to utilize an organometallic compound of a metal of Group 13 in Sun 'S287's process and, consequently, the combination of Sun 'S287 and Bonnemann '377 fails to make out a *prima facie* case of the obviousness of claims 1, 2, 5-7 or 9.**

An element of main claim 1, from which claims 2, 5-7 and 9 depend, is that the claimed process "[comprise] decomposing low-valency compounds of the metals of the magnetic particles ***in the presence of an organometallic compound of a metal of group 13.***"

The Examiner concedes that the primary reference, Sun ‘S287, does not teach this element. See, the third sentence in the second paragraph on page 3 of the Office Action dated August 31, 2007 (“‘S287 [i.e., Sun] does not explicitly states: ‘…in the presence of an organometallic compound of a metal of group 13’.”)

Accordingly, the Examiner relies on Bonnemann ‘377 to teach this feature. Indeed, at the bottom of page 3 and the top of page 4 of that same Office Action, the Examiner writes:

> “Compared to the instant invention, ‘377 uses similar organometal agent with similar metal salts for producing metals or metal alloys in powder or colloidal particles (Col. 1, Line 51-57). Therefore, it would have been obvious to one of ordinary skill in the art to choose organometallic compound of a metal of group 13 to recover the metal or alloy powder in the pure state with particular advantage by way of a simple filtration from the clear organic solution (col. 2, line 37, to col. 3, line 11) as demonstrated in ‘377 in the process of ‘S287.”

However, in combining Sun ‘S287 and Bonnemann ‘377, the Examiner makes a number of fatal errors that require reversal of this rejection.

First, the Examiner misconstrues Bonnemann ‘377, finding Bonnemann ‘377’s teachings relating to organometallic compounds of a metal of Group 13 to be “portable” and, therefore, possibly applicable to Sun ‘S287.

Bonnemann ‘377 relates to a process for preparing a finely divided microcrystalline-to-amorphous metal and/or alloy powders or highly dispersed colloids. See, column 1, lines 9-15. The process involves reduction of metal salts with alkaline metal hydroxides in organic solvents.

Id.

The reducing agents for such reduction are described by Bonnemann '377 as being ***"metal hydrides*** of the first or second main groups of the Periodic Table * * * ***by means of organoboron and/or organogallium complexing agents*** (emphasis added)." See, column 1, lines 51-55.

The Examiner considers the organoboron and/or organogallium compounds to meet the terms of the instant claims requiring "an organometallic compound of a metal of Group 13." Appellants agree that boron and gallium are elements of Group 13 of the Periodic Table.

However, Appellants disagree that Bonnemann '377's teachings with respect to these organoboron and/or organogallium compounds are relevant to Sun 'S287 or are properly imported to Sun 'S287.

Bonnemann '377 gives a more detailed description of the reducing agents at column 2, lines 6-36, particularly lines 17-23. Specifically, Bonnemann '377 teaches "[a]s the reducing agents there are used metal hydrides of the general formula M_x * * * which have been reacted with a complexing agent having a general formula [various boron or gallium formulas are provided]." Further, Bonnemann '377 clearly teaches at column 2, lines 30 ff, that "[t]he reaction of the metal hydrides with complexing agents [is] for the purpose of solvation in organic solvents * * *."

Bonnemann '377 then teaches in the paragraph beginning at column 2, lines 37 ff, that during the reduction of the metal salts, the complexed metal hydrides are converted into salts,

while the metal is released from the metal salt to be recovered as a precipitate by filtration.

It is clear that the value of the organoboron or organogallium compounds lies in its ability ***to complex with the metal hydride*** to form a metal hydride:organoboron or organogallium complex. The metal hydride:organoboron or organogallium complex, when reacted with a metal salt, will form complex salts that remain in solution and solid metal or alloy that will precipitate out of solution. The precipitated metal or alloy can be recovered by filtration.

This is the advantage the Examiner mentions when she refers to Bonnemann '377 at column 2, line 37, through column 3, line 11.

However, the Examiner completely ignores the fact that this advantage is taught in the context of a complexing reaction between the organoboron or organogallium compounds and metal hydride. Indeed, Bonnemann '377 hints of no value of the organoboron or organogallium compounds outside of this context and, therefore, the Examiner misconstrues Bonnemann '377 in finding or suggesting that the ability to precipitate metal lies in the organoboron or organogallium compounds in and of themselves. Appellants respectfully submit Bonnemann '377 teaches no value of the organoboron or organogallium compound apart from its use as a complexing agent with metal hydrides as a reducing agent complex for metal salts.

Second, the Examiner errs in finding these teachings of Bonnemann '377 importable into Sun 'S287 in spite of the fact that ***the process in Sun 'S287 does not involve the use of metal hydrides.***

Appellants pointed out in the amendment filed November 30, 2007, and in the Request

for Pre-Appeal Brief Review that Sun 'S287 did not utilize metal hydrides in his process and, therefore, there was no apparent reason why a person having ordinary skill in the art should employ Bonnemann '377's organoboron and/or organogallium complexing agents in the process of Sun 'S287. In the amendment dated November 30, 2007, please see the paragraph bridging pages 7-8. In the Request for Pre-Appeal Brief Review, please see the next to last paragraph on page 3.

The Examiner never alleges that the process of Sun 'S287 *does,* in fact, utilize metal hydrides. Nor does the Examiner respond directly to Appellants' argument, except only to say in the middle of page 5 of the final rejection that:

> "US '304 (sic) teaches choosing organometallic compound of a metal of group 13 to recover the metal or alloy powder in the pure state with particular advantage by way of a simple filtration from the clear organic solution (col.2, line 37 to col.3, line 11), which gives a good motivation to apply US'304's (sic) technique in the process of 'S287."

This is but a slight modification of the motivation statement provided in the first Office Action, and in no way addresses Appellants' clearly stated concern that motivation was lacking due to the facts that (1) Bonnemann '377's organoboron and/or organogallium agents are intended to complex with metal hydrides in Bonnemann '377's process, (2) the process of Sun 'S287 does not use metal hydrides and, therefore, (3) there is no apparent reason why persons skilled in the art would have been motivated to Bonnemann '377's metal hydride complexing agents in Sun 'S287's non-metal hydride process.

As reaffirmed by the Court in *In re Regel et al.,* 188 USPQ 136, 139, footnote 5 (CCPA 1975):

> "The mere fact that it is *possible* to find two isolated disclosures which might be combined in such a way to produce a new compound does not necessarily render such production obvious unless the art also contains something to suggest the ***desirability*** of the proposed combination (emphasis added)."

The Examiner errs in not providing a sound technical and/or legal reasoning why persons skilled in the art would still have been motivated to use Bonnemann '377's organoboron and/or organogallium metal hydride complexing agents in the process of Sun 'S287 in spite of the fact that the process of Sun 'S287 does not utilize metal hydrides. In the absence of such sound technical and/or legal reasoning, Appellants respectfully submit that the Examiner cannot have made out a *prima facie* case of the obviousness of claims 1, 2, 5-7 and 9.

2. The record reflects unexpected results attributable to the present invention and, therefore, even if a *prima facie* case of obviousness had been made out—which Appellants do not concede—such is rebutted by the proof of unexpected results.

Appellants have surprisingly discovered that the concentration of the organometallic compound is a result-effective variable determining colloid particle size. See, the instant specification at page 4, lines 13-16, and in the instant examples. On page 4, lines 13-16, Appellants teach that the mean particle size is established by the particular alkyl group used and also by the concentration of the organometallic compound. Instant Example 1 versus

Comparative Example 7 shows that quite unexpectedly the use of the organometallic compound has the effect of narrowing the size distribution: In Example 1, which uses the organometallic compound, a narrow size distribution is produced, as shown in Figure 2. In contrast, in Comparative Example 7, which does *not* use the organometallic compound, a broad size distribution results, as shown in Figure 1.

Appellants respectfully submit that there is no teaching or suggestion in either Sun 'S287 or Bonnemann '377 that the organometallic compound controls particle size distribution. Bonnemann '377 appears to teach at column 3, lines 25-40, that particle size distribution is controlled by reaction parameters, specifically temperature. Sun 'S287 only teaches that size is controlled intentionally by first preparing seed particles and then increasing the size of these seed particles by adding other reagents. See in Sun 'S287 the first paragraph in the right-hand column on page 1989.

In short, there is nothing in the combination of Sun 'S287 and Bonnemann '377 that teaches or suggests the results that Appellants have demonstrated in the instant specification. Accordingly, such results must not only be considered to be surprising, but also unexpected and, thus, as objective evidence of nonobviousness. Although these data are not in declaration form, consistent with the rule that *all* evidence of nonobviousness must be considered when assessing patentability, the Examiner was required to consider the data in the specification in determining whether the claimed invention provided unexpected results. *In re Soni,* 34 USPQ2d 1684, 1687 (Fed. Cir. 1995). The Examiner errs in not properly taking this data into consideration.

Towards the bottom of page 5 of the final rejection, the Examiner responds to Appellants'

data, finding:

> "'S287 teaches the FePt particle size is tunable from 3-10 nanometer diameter with a standard deviation of less than 5% (Abstract of 'S287), which are within the claimed ranges."

However, as noted above, the Examiner has already conceded that Sun 'S287 does not teach the use of an organometallic compound of Group 13, as required by the instant claims. Consequently, whatever effect the Examiner is referring to as being taught by Sun 'S287 cannot be due to the presence of an organometallic compound of Group 13 since none is present. There is, in short, still nothing in the cited combination of references that teaches or suggests that the size distribution can be controlled by including an organometallic compound of Group 13. The Examiner does not deny that the secondary references are silent on this benefit. Accordingly, the data in the specification are evidence of an unexpected result, which proves nonobviousness and the Examiner errs in failing to appreciate this fact.

B. Claims 12 and 13

1. <u>Sun 'S287 and Bonnemann '377 do not make out a *prima facie* case of the obviousness of claims 12 and 13.</u>

The Examiner has not dealt with any of the limitations of claims 12 and 13, except to comment towards the bottom of the first Office Action of August 31, 2007, that "'S287 teaches using TEM to determine FePt magnetic particle size." However, main claim 12, from which claim 13 depends, requires that the magnetic particles have a mean particle size between 2 and 15

nm, and a particle size distribution with a standard deviation of not more than 1.6 nm. The Examiner has not dealt with these limitations.

Instead, the Examiner has presumed that the process of Sun 'S287 as modified by Bonnemann '377 would achieve magnetic particles inherently meeting the mean particle size and particle size distribution requirements of claims 12 and 13. However, as explained above, the combination of Sun 'S287 and Bonnemann '377 is improper inasmuch as the Examiner errs in not providing a sound technical and/or legal reasoning why persons skilled in the art would still have been motivated to use Bonnemann '377's organoboron and/or organogallium metal hydride complexing agents in the process of Sun 'S287 in spite of the fact that the process of Sun 'S287 does not utilize metal hydrides. In the absence of such sound technical and/or legal reasoning, Appellants respectfully submit that the Examiner errs in failing to make out a *prima facie* case of the obviousness of claims 12 and 13.

2. <u>The subject matter of claims 12 and 13 is characterized by unexpected results as evidenced by the data in the instant specification.</u>

As developed above, the data in the instant specification prove that quite surprisingly the incorporation of an organometallic compound of a metal of group 13 results in magnetic particles, as claimed in claim 12 and 13, that are characterized by a mean particle size between 2 and 15 nm, and a narrow particle size distribution with a standard deviation of not more than 1.6 nm. There is nothing in the combination of Sun 'S287 and Bonnemann '377 that teaches or suggests how magnetic particles meeting these limitations of claims 12 and 13 can be obtained. Accordingly, the data in the instant specification must be considered to be unexpected and,

therefore, objective evidence of nonobviousness. The Examiner errs in failing to appreciate the significance of the data or according the data the proper weight in considering the patentability of claims 12 and 13.

II. Rejection of Claim 10 as being obvious over Sun 'S287 in view of Bonnemann '377 and further in view of allegedly admitted prior art in the specification at page 2, lines 2-13

A. Sun 'S287, Bonnemann '377 and the allegedly admitted prior art do not make out a *prima facie* case of the obviousness of claim 10.

Claim 10 depends on main claim 1 and requires that the decomposition is effected by photolysis or sonochemically. The Examiner concedes that neither Sun 'S287 nor Bonnemann '377 teaches photolysis or sonochemical decomposition, but alleges that photolysis or sonochemical decomposition would have been obvious, referring to an alleged admission by Appellants in the instant specification at page 2, lines 5 ff.

However, as noted above, the combination of Sun 'S287 and Bonnemann '377 already fails to make out a *prima facie* case of the obviousness of the instant process inasmuch as the Examiner errs in not providing a sound technical and/or legal reasoning why persons skilled in the art would still have been motivated to use Bonnemann '377's organoboron and/or organogallium metal hydride complexing agents in the process of Sun 'S287 in spite of the fact that the process of Sun 'S287 does not utilize metal hydrides. In the absence of such sound technical and/or legal reasoning, Appellants respectfully submit that the Examiner cannot have made out a *prima facie* case of the obviousness of claim 10. Indeed, even if the Examiner is

correct that photolysis and sonochemical decomposition techniques were known in the prior art, the combination of Sun 'S287, Bonnemann '377 and the allegedly admitted prior art still fails to provide any evidence of motivation why persons skilled in the art would have been motivated to use Bonnemann '377's organoboron and/or organogallium metal hydride complexing agents in the process of Sun 'S287 in the first place.

B. <u>The subject matter of claim 10 is characterized by unexpected results as evidenced by the data in the instant specification.</u>

As developed above, the data in the instant specification prove that quite surprisingly the incorporation of an organometallic compound of a metal of group 13 results in magnetic particles that are characterized by a mean particle size between 2 and 15 nm, and a narrow particle size distribution with a standard deviation of not more than 1.6 nm. There is nothing in the combination of Sun 'S287, Bonnemann '377 and the allegedly admitted prior art that teaches or suggests that carrying out the process of claim 10 should lead to the production of such magnetic particles. Accordingly, the data in the instant specification must be considered to be unexpected and, therefore, objective evidence of nonobviousness. The Examiner errs in failing to appreciate the significance of the data or according the data the proper weight in considering the patentability of claim 10.

III. Rejection of Claims 3, 4, 8, 11 and 14-18 as being obvious over Sun 'S287 in view of Bonnemann '377 and further in view of Bonnemann '304

A. Claims 3, 4, 8 and 11

1. <u>Sun 'S287, Bonnemann '377 and Bonnemann '304 do not make</u>

<u>out a *prima facie* case of the obviousness of claims 3, 4, 8 and 11.</u>

Claims 3, 4, 8 and 11 depend on main claim 1 and recite additional limitations that the Examiner says are obvious from Bonnemann '304.

However, as noted above, the combination of Sun 'S287 and Bonnemann '377 already fails to make out a *prima facie* case of the obviousness of the instant process inasmuch as the Examiner errs in not providing a sound technical and/or legal reasoning why persons skilled in the art would still have been motivated to use Bonnemann '377's organoboron and/or organogallium metal hydride complexing agents in the process of Sun 'S287 in spite of the fact that the process of Sun 'S287 does not utilize metal hydrides. In the absence of such sound technical and/or legal reasoning, Appellants respectfully submit that the Examiner cannot have made out a *prima facie* case of the obviousness of claims 3, 4, 8 and 11. Indeed, even if the Examiner is correct that the additional limitations of claims 3, 4, 8 and 11 can be found in the Bonnemann '304, the combination of Sun 'S287, Bonnemann '377 and Bonnemann '304 still fails to provide any evidence of motivation why persons skilled in the art would have been motivated to use Bonnemann '377's organoboron and/or organogallium metal hydride complexing agents in the process of Sun 'S287 in the first place.

2. **<u>The subject matters of claims 3, 4, 8 and 11 are characterized by unexpected results as evidenced by the data in the instant specification.</u>**

As developed above, the data in the instant specification prove that quite surprisingly the incorporation of an organometallic compound of a metal of group 13 results in magnetic particles

that are characterized by a mean particle size between 2 and 15 nm, and a narrow particle size distribution with a standard deviation of not more than 1.6 nm. There is nothing in the combination of Sun ‘S287, Bonnemann ‘377 and Bonnemann ‘304 that teaches or suggests that carrying out the processes of claims 3, 4, 8 or 11 should lead to the production of such magnetic particles. Accordingly, the data in the instant specification must be considered to be unexpected and, therefore, objective evidence of nonobviousness. The Examiner errs in failing to appreciate the significance of the data or according the data the proper weight in considering the patentability of claims 3, 4, 8 and 11.

B. Claims 14-18

1. <u>Sun ‘S287, Bonnemann ‘377 and Bonnemann ‘304 do not make out a *prima facie* case of the obviousness of claims 14-18.</u>

Claims 14-18 depend ultimately on claim 12. As noted above, the Examiner has not dealt with any of the limitations of claim 12 and, therefore, also claims 14-18, except to comment towards the bottom of the first Office Action of August 31, 2007, that "‘S287 teaches using TEM to determine FePt magnetic particle size." However, main claim 12 and, therefore, also claims 14-18 require that the magnetic particles have a mean particle size between 2 and 15 nm, and a particle size distribution with a standard deviation of not more than 1.6 nm. The Examiner has not dealt with these limitations.

Instead, as noted above, the Examiner has presumed that the process of Sun ‘S287 as modified by Bonnemann ‘377 would achieve magnetic particles inherently meeting the mean particle size and particle size distribution requirements of claims 14-18. However, as explained

above, the combination of Sun ‘S287 and Bonnemann ‘377 is improper inasmuch as the Examiner errs in not providing a sound technical and/or legal reasoning why persons skilled in the art would still have been motivated to use Bonnemann ‘377’s organoboron and/or organogallium metal hydride complexing agents in the process of Sun ‘S287 in spite of the fact that the process of Sun ‘S287 does not utilize metal hydrides. In the absence of such sound technical and/or legal reasoning, Appellants respectfully submit that the Examiner errs in failing to make out a *prima facie* case of the obviousness of claims 14-18.

2. The subject matter of claims 14-18 is characterized by unexpected results as evidenced by the data in the instant specification.

As developed above, the data in the instant specification prove that quite surprisingly the incorporation of an organometallic compound of a metal of group 13 results in magnetic particles, as claimed in claim 14-18, that are characterized by a mean particle size between 2 and 15 nm, and a narrow particle size distribution with a standard deviation of not more than 1.6 nm. There is nothing in the combination of Sun ‘S287 and Bonnemann ‘377 that teaches or suggests how magnetic particles meeting these limitations of claims 14-18 can be obtained. Accordingly, the data in the instant specification must be considered to be unexpected and, therefore, objective evidence of nonobviousness. The Examiner errs in failing to appreciate the significance of the data or according the data the proper weight in considering the patentability of claims 14-18.

In view of the foregoing, Appellants respectfully request that the Honorable Board reverse the final rejections.

AUTHORIZATION TO CHARGE FILING FEE TO DEPOSIT ACCOUNT

It is requested that the fee for the filing of the Brief on Appeal be charged to the undersigned's Deposit Account No. 14-1263 in the amount of $270.00 for a small entity.

CONDITIONAL PETITION FOR EXTENSION OF TIME

If any extension of time for this response is required, appellant requests that this be considered a petition therefor. Please charge the required Petition fee to Deposit Account No. 14-1263.

ADDITIONAL FEE

Please charge any insufficiency of fees, or credit any excess to our Deposit Account No. 14-1263.

Respectfully submitted,

NORRIS McLAUGHLIN & MARCUS, P.A.

By /Kurt G. Briscoe/

Kurt G. Briscoe
Reg. No. 33,141
875 Third Avenue
18th Floor
New York, NY 10022
Phone: (212) 808-0700
Fax: (212) 808-0844

(8) CLAIMS APPENDIX

1. A process for the preparation of magnetic particles, said process comprising decomposing low-valency compounds of the metals of the magnetic particles in the presence of an organometallic compound of a metal of group 13.

2. The process as claimed in claim 1, wherein the magnetic particles produced have a mean particle size between 3 and 15 nm and a particle size distribution with a standard deviation of not more than 1.6 nm.

3. The process as claimed in claim 2, wherein the mean particle size is established by the nature and concentration of the organometallic compound.

4. The process as claimed in claim 1, wherein the organometallic compound is an organoaluminum compound.

5. The process as claimed in claim 1, wherein the low-valency compounds comprise iron, cobalt or nickel or mixtures thereof.

6. The process as claimed in claim 5, wherein the low-valency compounds are carbonyl compounds of iron, of cobalt or of nickel.

7. The process as claimed in claim 5, wherein the low-valency compounds are olefin compounds of iron, of cobalt or of nickel.

8. The process as claimed in claim 4, wherein the organoaluminum compound is an aluminumtrialkyl or an alkylaluminum hydride.

9. The process as claimed in claim 1, wherein the decomposing is effected by thermolysis.

10. The process as claimed in claim 1, wherein the decomposing is effected by photolysis or sonochemically.

11. The process as claimed in claim 1, which further comprises protecting the magnetic particles produced in an organic solvent by aftertreatment with air.

12. A monometallic or polymetallic magnetic particle having a mean particle size, determined by TEM, of between 2 and 15 nm and a particle size distribution with a standard deviation of not more than 1.6 nm.

13. The magnetic particle as claimed in claim 12, which contains iron, cobalt or nickel.

14. The magnetic particle as claimed in claim 12 or 13, which is protected by aftertreatment with air.

15. Method of using a magnetic particle as claimed in claim 12 for the preparation of magnetofluids having high saturation magnetization with the aid of dispersants.

16. Method of using the magnetic particle as claimed in claim 12 after application of a cell-compatible coating as a magnetic cell marker.

17. Method of using the magnetic particle as claimed in claim 12 for magnetic cell separation.

18. Method of using the magnetic particle as claimed in claim 12 for magneto-optical information storage.

(9) EVIDENCE APPENDIX

NONE

As discussed above, Appellants rely on the data in the instant specification, specifically, Example 1 on pages 5-6 versus Comparative Example 7 on page 9, with the results for Example 1 being shown in Figure 2 and the results of Comparative Example 7 being shown in Figure 1.

(10) RELATED PROCEEDINGS APPENDIX

NONE